

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1-22. (Cancelled)

23. (Previously Presented) An energy management system for controlling the temperature of a fuel cell system of a vehicle, comprising:

a fuel cell stack;

an air supply providing air to said fuel cell stack;

a water supply;

a hydrogen supply;

a heater that is connected to an output of said fuel cell stack, that is arranged to warm said stack and said water supply, and that is external to said fuel cell stack; and

a controller that controls said hydrogen supply and said air supply to power said heater to warm said fuel cell stack and said water supply when said vehicle is not running.

24. (Previously Presented) The energy management system of Claim 23 wherein said heater is a resistive heater.

25. (Previously Presented) The energy management system of Claim 23 further comprising: a pressure sensor that generates a hydrogen pressure signal for said hydrogen supply and that is connected to said controller.

26. (Previously Presented) The energy management system of Claim 25 further comprising: a stack temperature sensor that is connected to said controller and that generates a stack temperature signal.

27. (Currently Amended) ~~The energy management system of claim 26~~ An energy management system for controlling the temperature of a fuel cell system of a vehicle, comprising:

a fuel cell stack;

an air supply providing air to said fuel cell stack;

a water supply;

a hydrogen supply;

a heater that is connected to an output of said fuel cell stack, that is arranged to warm said stack and said water supply, and that is external to said fuel cell stack;

a pressure sensor that generates a hydrogen pressure signal for said hydrogen supply and that is connected to said controller;

a stack temperature sensor that is connected to said controller and that generates a stack temperature signal; and

a controller that controls said hydrogen supply and said air supply to power said heater to warm said fuel cell stack and said water supply when said vehicle is not running, wherein said controller determines whether heating is necessary based on said stack temperature if said hydrogen pressure signal exceeds a first pressure value.

28. (Previously Presented) The energy management system of Claim 27 wherein said controller initiates said air supply and said hydrogen supply if heating is necessary until said stack temperature signal exceeds a first stack temperature value.

29. (Previously Presented) The energy management system of Claim 26 further comprising: an ambient temperature sensor that generates an ambient temperature signal; and a water tank sensor that generates a water temperature signal.

30. (Currently Amended) ~~The energy management system of Claim 29~~ An energy management system for controlling the temperature of a fuel cell system of a vehicle, comprising:

a fuel cell stack;

an air supply providing air to said fuel cell stack;

a water supply;

a hydrogen supply;

a heater that is connected to an output of said fuel cell stack, that is arranged to warm said stack and said water supply, and that is external to said fuel cell stack;

a pressure sensor that generates a hydrogen pressure signal for said hydrogen supply and that is connected to said controller;

a stack temperature sensor that is connected to said controller and that generates a stack temperature signal;

an ambient temperature sensor that generates an ambient temperature signal; and a water tank sensor that generates a water temperature signal; and

a controller that controls said hydrogen supply and said air supply to power said heater to warm said fuel cell stack and said water supply when said vehicle is not running, wherein said controller uses said stack temperature signal, said ambient temperature signal and said water temperature signal to access a lookup table to determine whether heating is necessary when said pressure signal does not exceed a first pressure value.

31. (Previously Presented) The energy management system of Claim 30 further comprising: a hydrogen tank level sensor that generates a tank level signal.

32. (Previously Presented) The energy management system of Claim 31 wherein said controller initiates said air supply and said hydrogen supply if heating is necessary and if said tank level signal exceeds a first tank level value.

33. (Previously Presented) The energy management system of Claim 32 wherein said controller continues heating until said stack temperature signal exceeds a first stack temperature value.

34. (Previously Presented) The energy management system of Claim 31 wherein said controller activates a purge, drains water from said water supply, and inhibits vehicle startup if said tank level signal does not exceed a first tank level value.

35-46. (Cancelled)

47. (Previously Presented) An energy management system for controlling the temperature of a fuel cell system supplying power to a load, comprising:

a fuel cell stack;

an air supply providing air to said fuel cell stack;

a water supply;

a hydrogen supply;

a heater that is connected to an output of said fuel cell stack, that is arranged to warm said stack and said water supply, and that is external to said fuel cell stack;

a pressure sensor that generates a hydrogen pressure signal for said hydrogen supply;

a stack temperature sensor that generates a stack temperature signal;
and

a controller that determines whether heating is necessary based on said stack temperature signal if said hydrogen pressure signal exceeds a first pressure value and that selectively controls said hydrogen supply and said air supply to power said heater to warm said fuel cell stack and said water supply.

48. (Previously Presented) The energy management system of Claim 47 wherein said controller initiates said air supply and said hydrogen supply if heating is necessary until said stack temperature signal exceeds a first stack temperature value.

49. (Previously Presented) The energy management system of Claim 47 further comprising: an ambient temperature sensor that generates an ambient temperature signal; and a water tank sensor that generates a water temperature signal.

50. (Previously Presented) The energy management system of Claim 49 wherein said controller uses said stack temperature signal, said ambient temperature signal and said water temperature signal to access a lookup table to determine whether heating is necessary when said pressure signal does not exceed a first pressure value.

51. (Previously Presented) The energy management system of Claim 50 further comprising: a hydrogen tank level sensor that generates a tank level signal.

52. (Previously Presented) The energy management system of Claim 51 wherein said controller initiates said air supply and said hydrogen supply if heating is necessary and if said tank level signal exceeds a first tank level value.

53. (Previously Presented) The energy management system of Claim 52 wherein said controller continues heating until said stack temperature signal exceeds a first stack temperature value.

54. (Previously Presented) The energy management system of Claim 51 wherein said controller activates a purge, drains water from said water supply, and inhibits vehicle startup if said tank level signal does not exceed a first tank level value.